WHAT IS CLAIMED IS:

1. A downlink signal constitution method, which is for a downlink of a cellular system using an orthogonal frequency division multiplexing access method, the downlink signal constitution method comprising:

(a) coding, interleaving, and symbol-mapping data of a common channel and a control channel, and assigning fundamental pilot symbols, necessary for a demodulation of the common channel and the control channel, to time, frequency, and antenna;

(b) receiving data to be transmitted through a traffic channel of each user, and determining a transmission mode of each user according to the user's moving speed, channel information, and traffic requirement;

(c) determining additional pilot symbols, additionally necessary for a demodulation of the traffic channel, according to the transmission mode and moving speed by users; and

(d) coding, interleaving, and symbol-mapping the data of the traffic channel according to the transmission mode by users, and assigning the mapped symbols and the additional pilot symbols according to time, frequency, and antenna.

2. The downlink signal constitution method as claimed in claim 1, wherein the assignment of pilot symbols for the sub-carriers used by a first user group is different from the assignment of pilot symbols for the sub-carriers used by a second user group.

3. The downlink signal constitution method as claimed in claim 2, wherein the assignment of pilot symbols for the sub-carriers used by the first user group is denser than the assignment of pilot symbols for the sub-carriers used by the second user group.

4. The downlink signal constitution method as claimed in claim 3, wherein the first user group is a higher-speed user group than the second user group, and some of all the sub-carriers is previously allocated for the first user group.

5. The downlink signal constitution method as claimed in claim 1, wherein the step (c) of determining additional pilot symbols includes:

using no additional pilot symbol, when the transmission mode of the traffic channel is using only a basic antenna with the moving speed of a mobile station being less than a reference value; and

using pilot symbols for additional antenna, when the transmission mode of the traffic channel is using an additional antenna with the moving speed of the mobile station being less than the reference value.

6. The downlink signal constitution method as claimed in claim 1, wherein the step (c) of determining additional pilot symbols includes:

additionally inserting pilot symbols for basic antenna in consideration of the moving speed of a mobile station, when the transmission mode of the traffic channel is using only a basic antenna with the moving speed of the

mobile station exceeding a reference value; and

additionally inserting pilot symbols for basic and additional antennas in consideration of the moving speed of the mobile station, when the transmission mode of the traffic channel is using an additional antenna with the moving speed of the mobile station exceeding the reference value.

7. The downlink signal constitution method as claimed in claim 1, wherein the step (d) of assigning additional pilot symbols includes generating traffic channel symbols previously in consideration of the number of the additional pilots.

8. The downlink signal constitution method as claimed in claim 1, wherein the step (d) of assigning additional pilot symbols includes generating symbols according to a maximum number of traffic channel symbols, and then puncturing at positions for transmitting the additional pilot symbols.

9. The downlink signal constitution method as claimed in claim 1, wherein the step (d) of assigning additional pilot symbols includes generating traffic channel symbols previously in consideration of a portion of the number of the additional pilot symbols, and then puncturing at positions for transmitting the rest of the additional pilot symbols.

10. A downlink signal constitution method, which is for a cellular system using an orthogonal frequency division multiplexing access method,

the downlink signal constitution method comprising:

(a) dividing users into a first user group including high-speed mobile users and a second user group including the rest of the users, in consideration of each user's moving speed and traffic volume;

(b) allocating a first sub-carrier band for the first user group, and a second sub-carrier band for the second user group; and

(c) assigning pilot symbols to the first and second sub-carrier bands, the pilot symbols assigned to the first sub-carrier band being different in assignment density from the pilot symbols assigned to the second sub-carrier.

11. The downlink signal constitution method as claimed in claim 10, wherein the assignment of pilot symbols to the first sub-carrier band is denser than the assignment of pilot symbols to the second sub-carrier band.

12. The downlink signal constitution method as claimed in claim 11, wherein a proportion of the first sub-carrier band in the whole sub-carrier band is less than a proportion of the second sub-carrier band.

13. A downlink signal constitution apparatus, which is for a cellular system using an orthogonal frequency division multiplexing access method, the downlink signal constitution apparatus comprising:

a first memory for storing traffic channel information of each user;

a second memory for storing channel information, traffic requirement,

and moving speed information of each user;

a transmission user and transmission mode determiner for determining a transmission user and a transmission mode according to a defined method using the information stored in the second memory;

a traffic channel processor for reading the traffic channel information stored in the first memory according to the transmission mode determined by the transmission user and transmission mode determiner, and performing coding, interleaving, and symbol-mapping of the traffic channel;

an additional pilot symbol generator for generating additional pilot symbols necessary for a demodulation of the traffic channel, using the transmission mode determined by the transmission user and transmission mode determiner and the moving speed information stored in the second memory; and

a time/sub-carrier/antenna mapper for multiplying the traffic channel symbols output from the traffic channel processor and the additional pilot symbols output from the additional pilot symbol generator by a channel gain by channels/users, and mapping the resulting symbols to time, sub-carrier, and antenna by a defined method.

14. The downlink signal constitution apparatus as claimed in claim 13, further comprising:

a common/control channel processor for receiving common/control channel information, and performing coding, interleaving, and symbol-mapping of the received common/control channels; and

a fundamental pilot symbol generator for generating a fundamental pilot symbol necessary for demodulation of the common/control channels.

15. A recording medium with a built-in program, which implements a downlink signal constitution method for a cellular system using an orthogonal frequency division multiplexing access method, the program comprising:

coding, interleaving, and symbol-mapping data of a common channel and a control channel, and assigning fundamental pilot symbols, necessary for a demodulation of the common channel and the control channel, to time, frequency, and antenna;

receiving data to be transmitted through a traffic channel of each user, and determining a transmission mode of each user according to the user's moving speed, channel information, and traffic requirement;

determining additional pilot symbols, additionally necessary for a demodulation of the traffic channel, according to the transmission mode and moving speed by users; and

coding, interleaving, and symbol-mapping the data of the traffic channel according to the transmission mode by users, and assigning the mapped symbols and the additional pilot symbols according to time, frequency and antenna.

16. A recording medium with a built-in program, which implements a downlink signal constitution method for a cellular system using an orthogonal frequency division multiplexing access method, the program comprising:

dividing users into a first user group including high-speed mobile users and a second user group including the rest of the users, in consideration of each user's moving speed and traffic volume;

allocating a first sub-carrier band for the first user group, and a second sub-carrier band for the second user group; and

assigning pilot symbols to the first and second sub-carrier bands, the pilot symbols assigned to the first sub-carrier band being different in assignment density from the pilot symbols assigned to the second sub-carrier.